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A MULTI-PHASE ASSESSMENT OF THE EFFECTS OF COVID-19 ON FOOD SYSTEMS AND RURAL LIVELIHOODS IN ZAMBIA

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This country report forms part of a series presenting results from three rounds of mixed-methods, comparative assessments conducted by the APRA Programme on the effects of COVID-19 on local food systems and rural economies covering over 800 households and 65 key informants in eight countries (Ethiopia, Ghana, Kenya, Malawi, Nigeria, Tanzania, Zambia and Zimbabwe), beginning in June-July 2020 and ending in May-June 2021.

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- The COVID-19 crisis has disrupted the food systems and rural livelihoods of the households surveyed for this study. This has coincided with an economic meltdown characterised by rising debt, a weak currency and growing inflation.
- Most households reported a reduction in movements both within and outside their own village between October 2020 and March 2021.
- Many households reported school children (both girls and boys) doing more housework and farm work during the closure of schools due to COVID-19.
- Most households received emergency support from the government, while support from family and friends, local religious organisations, local village organisations and other external organisations remained insignificant throughout the pandemic.
- Households reporting reductions in their participation in both farming and business activities increased October 2020 and March 2021.
- The number of households reporting an ability to access work within their village was significantly higher than the number able to access work outside of their village. While, the proportion of households accessing work outside of their village increased slightly over time, it still remained below the number accessing work inside their village.
- The ability of households to hire farm labour to continue farming activities remained high between October 2020 and March 2021, but the cost of labour also rose.
- Most households reported a reduction in their ability to sell various commodities at the farm-gate and in local, district, national and cross-border markets in October 2020, but access had improved by March 2021.
- Households reporting a reduction of the number of buyers or brokers coming to their village to buy farm produce remained high, but reduced slightly by 6% points by March 2021 compared to October 2020.
- While about half of households reported a decrease in the availability of all services for agricultural production in October 2020, availability had improved by March 2021 except for contractual arrangements for cash crops and concessionary loans whose availability continued to decrease. Prices for farm inputs, tillage services, and rental of agricultural land were reported to have increased with the onset of COVID-19 by most households and the proportion reporting an increase continued to rise, except for farm inputs.
- Households falling in a 'high food insecurity' status reduced from about half of surveyed households in October 2020 to about a third by March 2021, while the proportion falling in the 'low food insecurity' category increased between the two time periods.
- Households reporting an ability to take full control of their lives reduced significantly from nearly half of the respondents before the onset of the pandemic to less than one fifth during October 2020, but then increased to just over a fifth of households by March 2021, remaining far behind pre-pandemic levels.

1. Introduction

1.1 The shock of COVID-19 and the state response

COVID-19 was declared a pandemic by the World Health Organization (WHO) in March 2020 (Haider et al., 2020). The speed with which the pandemic spread geographically, and the high rate of mortality of its victims (initially in high and middle-income countries), prompted many countries around the world to institute 'lockdowns' of various sorts to contain it (Carmody and McCann, 2020; Haider et al, 2020). Globally, the policy guidelines on containment of COVID-19, while similar, have been applied by individual countries with different levels of intensity in line with the evolution of the pandemic nationally. The measures include: stay-at-home orders; frequent washing of hands or use of alcohol-based hand sanitisers; physical distancing; use of Personal Protective Equipment (PPE) such as face masks; restrictions of or limitations to, the number of people attending public gatherings; closure of borders; curfews; travel bans; and total or partial lockdowns (Olayide, 2020; WHO, 2020).

While the global concern in the early months following the emergence of COVID-19 was with health impacts, the 'lockdown' measures put in place by governments triggered global socioeconomic shocks as economies entered recessions due to disruption of economic activity that the 'lockdown' measures entailed. Data suggests that the socioeconomic shocks arising from 'lockdowns' have been more severe in sub-Saharan Africa countries, generating dire livelihood consequences for most citizens who depend on the informal economy for survival, that these will likely take decades to recover from, and that the implications for human life experience will be generational (Carmody and McCann, 2020; McCann and Matenga, 2020). Some studies also indicate that the extent of harm caused by the 'lockdowns' will be a function of many factors, including the breadth, depth and length of the measures put in place by governments, the state of the economy preceding the emergence of COVID-19, and levels of fear about the Coronavirus in respective countries (Haider et al., 2020: 7).

Zambia identified its first COVID-19 case on 18 March 2020. Before the onset of the COVID-19 pandemic, the Zambian economy was projected to experience negative growth in 2020, dropping by at least 2.6%. The country's poor economic performance was triggered by a severe drought in 2018 and, together with declining mining activity, resulted in the gross domestic product dropping from 4% in 2018 to 1.5% in 2019 (AGRA, 2020). The impact of this drought on agricultural and hydroelectricity production, and a fall in copper prices due to reduced demand as a result of COVID-19, has led to a downward spiral of Zambia's economy. This, together with rising debt due to government over-borrowing has caused a severe economic crisis (ibid). The national currency, the Zambian Kwacha, has been depreciating over the last few years, and by one estimate had been depreciating by about 50% on a yearly basis by October 2020 (FAO, 2020). From the foregoing, it is clear that the impacts of COVID-19 and an economy under pressure are self-reinforcing.

In anticipation of the outbreak of the COVID-19 pandemic, the government took proactive steps by constituting a multi-sectoral COVID-19 response team, approving a COVID-19 Contingency and Response Plan and a budget on 13 March 2020 (AGRA, 2020), and gazetted the orders/guidelines to manage the spread of the pandemic. The measures included: frequent washing of hands or use of alcohol-based hand sanitisers; social distancing; use of face masks in public; closure of borders and international travel bans; and banning of public gatherings and/or limiting the number of people in attendance. All learning institutions were closed and selected businesses were restricted (Haider et al, 2020; GRZ, 2020). Furthermore, government authorities made stay-at-home appeals and undertook partial lockdowns in targeted geographic areas (see Section 3 for a detailed elaboration on COVID-19 related measures instituted by the Zambian Government).

The two months following the first confirmed case of COVID-19 were characterised by a slow spread, and cases remained relatively low officially. For instance, on 15 April 2020, the country reported three new confirmed cases but recorded no deaths, bringing the national case tally to 48 and two deaths (ZNPHI, 2020a). By 15 May 2020 there were 14 new cases and no deaths, raising the total confirmed cases to 668 and seven deaths (ZNPHI, 2020b). However, it is instructive to note that the relatively low number of cases was most likely a result of low rates of testing due to inadequate testing kits and a lack of capacity to account for COVID-19 deaths. Uncertainty surrounding COVID-19 and the low numbers of confirmed cases and low death rates at the time prompted a national debate as to whether it was the health of the people or the economy and livelihoods that the government should care about, as it weighed different options in dealing with the pandemic. There were calls for a total lockdown from a cross-section of people, including opposition political parties when cases began escalating. The government, however,

refused to impose a total lockdown claiming that that would have a worse outcome than COVID-19 itself. The government argued that a total lockdown would result in severe livelihood consequences given the high levels of dependence on the informal economy for survival by the majority of the population (Mvula, 2020). The government, therefore, kept essential businesses dealing with goods and services open, and this included all shops, supermarkets and food markets. The government opted for "a phased strategy that will take into consideration interventions for the low and high income groups, low and high density areas, rural and urban areas" (GRZ, 2020).

When some COVID-19 measures began to be lifted in May 2020, Zambia experienced an exponential growth in COVID-19 cases particularly during the month of July. COVID-19 confirmed cases rose from 1,632 on 6 July to 4,481 on 26 July (OCHA, 2020a). This increase forced Parliament to adjourn, particularly after two Members of Parliament also died after contracting it. By 29 October 2020, the country had reported 16,325 cases and 348 deaths (OCHA, 2020b), and this signalled the start of what was characterised as a 'second COVID-19 wave'. As of 23 February 2021 the second wave had peaked, and the country had recorded 75,582 cases and 1,040 deaths (ZNPHI, 2021a). Cases began to abate between March and April 2021 but then rise again in May 2021 with a warning that a third wave was imminent. The month of June 2021 can be described as the COVID-19 'apocalypse' for Zambia as the rise in cases and deaths was unprecedented. On 20 June 2021, the country recorded 2,060 new cases and 49 deaths in the preceding 24 hours, bringing the cumulative confirmed cases to 129,033 and cumulative deaths to 1,644 (ZNPHI, 2021b).

1.2 Structure of the paper

This paper is as divided into seven sections. Section One is an introduction of the study and gives the context in relation to the shock of COVID-19 at the global level and then the national level and state responses. Section Two highlights the objectives of the study and the research strategy. Section Three discusses the research results in relation to COVID-19 symptoms at household, village or district levels, and respondents' access to health care during the pandemic. The section further highlights COVID-19 measures put in place and controls on movements. Section Three discusses the burden of care responsibilities at home by school children during the closure of schools. It further presents findings on assistance measures received by communities in the study areas during the pandemic period. Section Four presents study results on the impacts of COVID-19 on agricultural production activities, including small-scale farmer participation in farming, access to work within and outside villages, and the ability of farmers to hire labour. The section further discusses the ability of households to sell farm commodities in different types of markets and transport commodities to points of sale, and the extent to which buyers or brokers came to the villages to buy farm produce. The section then discusses the impact of COVID-19 on the availability of various services for agricultural production and their cost. Section Five reveals the availability of different food types and their costs. Using the Food Insecurity Experience Score (FIES) the section highlights the proportions of households in low, medium and high food insecurity. Section Six presents the findings of the study on the pandemic's probable impact on household poverty using a self-assessed wellbeing. Section Seven provides a conclusion of the study and discusses policy implications.

2. Data

2.1 Research objectives and design

The objective of this study was to gain real-time insights into how the COVID-19 crisis was unfolding in Zambia and how rural people and food and livelihood systems were responding. The study focused on documenting and understanding the differential impacts of the pandemic at the household level in terms of changes in participation in farming activities, availability of services for agricultural production, labour and employment, marketing and transport services, food and nutrition security and poverty and wellbeing. The study was designed to be carried out in three rounds, eight weeks apart in satellite small-scale farm households surrounding Mkushi Farm Block,[1] in Mkushi District, Central Province, in order to get an understanding of changes over time in these variables and how rural households were being affected by these changes. Due to logistical challenges, the first set of data collection was missed, so only two rounds were collected, in October and November 2020 (Round 1, R1) and in February and March 2021 (Round 2, R2).

In order to get a complete account of the reality of small-scale farmer livelihoods under the COVID-19 pandemic, the study employed a mixed methods approach in which both quantitative and qualitative data were collected concurrently. Quantitative data

1 A farm block is a large agricultural area where infrastructure such as feeder roads, electricity, water for irrigation and domestic uses, and communication facilities are provided by the government to stimulate sustainable partnerships with private sector investors.

Table 1: Survey sample size

Survey round	Gender of household head	Number of respondents	%
R1	Male	102	88.7
	Female	13	11.3
	Total	**115**	**100.0**
R2	Male	93	90.3
	Female	10	9.7
	Total	**103**	**100.0**

Source of data: Own calculations from APRA COVID-19 Rapid Assessment Surveys

were collected through a household survey using a structured questionnaire directed at the head of the household, while qualitative data was obtained using an open-ended interview guide directed at key informants at the community level. Furthermore, a documentary review of national status reports, articles, technical reports and other published materials from other researchers and national and international organisations that have been tracking the evolution of COVID-19 and its impact on food systems and livelihoods was conducted.

2.2 Sampling strategy

For logistical reasons, the study was conducted in sites where previous quantitative studies had taken place under Land and Agricultural Commercialisation in Africa (LACA) projects. Thus, satellite small-scale farm households in five communities (Lilanda, Kabengeshi, Masansa, Miloso and Nshinso) surrounding Mkushi Farm Block in Mkushi District were selected for the study. The sites were also identified as ideal to investigate the impact of COVID-19 on small-scale producers because of the successful small-scale agricultural commercialisation sector that had been developing, supported by natural agro-ecological endowments, well-developed rural infrastructure and the presence of major agri-business companies and financial institutions. The small-scale farmers in these areas benefit from linkages with commercial farmers in the block and currently produce a large proportion of the country's vegetables, like tomatoes that are sold in the capital city Lusaka and Copperbelt Province, while others have adopted other commercial crops such as wheat and soya beans.

Lists of households for each of the five selected communities were obtained from area-based agricultural extension officers. These lists served as sampling frames for each community. The study aimed to obtain a sample of at least 100 households, targeting 20-25 households per community with a 50% gender balance. During R1, a total of 115 households (102 male- and 13 female-headed, representing 88.7% and 11.3% respectively) were interviewed. In R2, a total of 103 households (93 male- and 10 female-headed, representing 90.3% and 9.7% respectively) were also interviewed. In both rounds, as the data suggests, the study did not meet the envisaged gender balance of households (**Table 1**). The sampling frames for each community had far less female-headed households compared to male-headed. Thus, efforts were made to interview all the female-headed households on the sampling frames who were reachable by telephone.

2.3 Survey strategy

In line with COVID-19 safeguards, the quantitative survey was telephone-based to avoid the possibility of transmitting the Coronavirus. The respondents were contacted by phone and appointments made for interviews. The survey instrument was electronically-based, with data being directly entered using a laptop, tablet or smartphone. Data were electronically cleaned to check for any wrong entries or inconsistencies before analysis. Analysis was carried out using STATA.

2.4 Key informant interview strategy

Qualitative data was important to contextualise the data collected in the quantitative survey. Therefore, in-depth interviews were conducted with at least five key informants purposively selected from different categories of local people who had insight into the livelihoods of small-scale farmers in the five study communities before and during the COVID-19 pandemic. The key informants included two agricultural extension officers, a traditional leader, a local government official and a community leader, each representing one community. An open-ended interview guide was used to collect qualitative data from these informants through telephone interviews.

3. COVID-19

3.1 COVID-19 symptoms and healthcare

All survey respondents in both R1 and R2 reported observing COVID-19 guidelines. However, the

proportion of respondents who reported having household members with COVID-19 symptoms increased from 4% to 21%; the proportion of those aware of anyone in the village with these symptoms increased from 12% to 43%. The proportion being aware of confirmed COVID-19 cases increased from 49% to 83%. However, almost all households reported having access to health services (97% and 99% in R1 and R2 respectively). Our key informant data also agrees with the survey findings. Key informants stated that in the first few months following the outbreak of COVID-19 in Zambia, they had not heard of anyone within their households and villages exhibiting COVID-19-like symptoms but had heard of unconfirmed cases at district level, particularly in Mkushi Town.

3.2 COVID-19 related measures

The Government of Zambia responded to the outbreak of the pandemic by putting in place 'lockdown' measures to prevent its spread, as well as policy responses to mitigate its negative socioeconomic impacts. Of note is the Statutory Instrument Number 22 of 2020: The Public Health (Infected Areas) (Coronavirus Disease 2019), Regulations, 2020. These regulations were meant to aid the enforcement of 'lockdown' measures that the government was expected to announce. Prior to the pronouncement of the first COVID-19 case in the country, learning institutions, including schools, colleges and universities were ordered to close on 17 March 2020 (GRZ, 2020). The first major package of COVID-19 'lockdown' measures in Zambia were announced on 25 March 2020, through a presidential address to the nation. Some of the measures announced focused largely on controlling international travel to prevent further 'importation' of COVID-19 cases into the country. Thus, Zambian Missions abroad and the Department of Immigration were ordered to review the issuance of visas for people wanting to travel to Zambia, and at all ports of entry into the country for all travellers from countries affected by COVID-19. All international flights were to land the Kenneth Kaunda International Airport in the capital city Lusaka and all travellers were to be screened for COVID-19 at points of entry and those exhibiting symptoms were to be quarantined. Non-essential foreign travel to countries which had confirmed COVID-19 cases were suspended.

Other measures announced focused on internal business operations that attracted gatherings and were likely to be Coronavirus transmission hotspots. These measures included the closure of gyms, bars, nightclubs, cinemas and casinos. Restaurants were to operate on a takeaway basis only. Public gatherings such as conferences, weddings, funerals and festivals were restricted to no more than 50 participants. The measures were to be observed for an initial 14 days from midnight on 26 March 2020 and were subject to review (GRZ, 2020). Public health guidelines (including wearing of face masks, frequently washing hands or sanitising, maintaining physical distance and avoiding handshakes) were issued and all public premises and business premises were advised to provide handwashing facilities or alcohol-based hand sanitisers at entry points.

Some of the measures have since been relaxed completely while others have been restored and relaxed a number of times depending on the way the pandemic progressed. International travel, for example, was completely restored and all airports opened in June 2020. However, the more internally-focused measures have been periodically lifted and restored. For instance, on 8 May 2020, the government eased some of the containment measures, including the opening of schools for students in final examination years and opening of restaurants and gyms, but bars and taverns remained closed (Haider et al., 2020). In the subsequent months, more restrictions were lifted, including partial opening of bars to the public and the fully opening up of schools, colleges and universities for face-to-face learning.

However, with the country experiencing a third COVID-19 wave in May 2021, the more inward-focused 'lockdown' measures were restored on 16 June 2021. All schools were ordered to close immediately for a period of 21 days while colleges and universities were to revert to online teaching. Conferences and workshops were suspended indefinitely while church gatherings were restricted in terms of number of services per week and duration. Restaurants were ordered to revert to take-away services only, while bars, casinos and nightclubs were to operate from Friday to Sunday evenings, from 6pm to 10pm. Public gatherings were also limited to 50 people and public transport operators were ordered to ensure that passengers wore masks and observed physical distancing. As before, these measures were to be reviewed after 14 days.

The frequent and premature closures of schools, colleges and universities have, however, raised concerns about the potential life-long negative impact on learners, particularly those from low-income backgrounds (OCHA, 2020a). While embracing virtual learning modes of instruction was desirable, the country was ill-prepared for both learners and instructors to engage in technology-dependent learning platforms due to lack of the necessary infrastructure (ibid). The most vulnerable students, and those from rural areas,

were the most challenged in accessing and/or affording smart phones, tablets or laptops, as well as the cost of the internet. This is likely to aggravate existing inequalities in accessing education between urban and rural areas, and high-income and low-income groups (ibid). A further challenge to virtual learning has been poor internet connectivity and the frequent and uncoordinated electricity power cuts. Additionally, frequent and prolonged closure of schools is likely to compel children to take up more family farm-related work, wage work and/or home care duties that may be detrimental to their health (FAO, 2020).

Over and above the 'lockdown' measures, the Government of Zambia also came up with policy responses in support of businesses to mitigate the impact of the lockdown measures. Thus, the government constituted a multi-sectoral COVID-19 response team and approved a COVID-19 Contingency and Response Plan and a budget in March 2020 (AGRA, 2020). Related to the agricultural sector, a policy response package was pronounced: work to ensure that the country's new agriculture investment plan (the National Agriculture Investment Plan (NAIP)) was resilient to COVID-19 and climate change shocks; develop a post-COVID-19 agriculture strategy to drive recovery and growth; provide support to ensure efficient supply of agro-inputs especially seeds and fertiliser; and re-structure the food supply chains to be more resilient to COVID-19 (AGRA, 2020:1-3). Analysis of this policy response package, however, shows that it was not inclusive as it lacked a specific focus on the small-scale farmers who were likely to be the most adversely affected (Nhemachena and Murwisi, 2020). For instance, the proposed post-COVID-19 agriculture strategy to drive recovery and growth, is predicated on 'flagship investment programmes' (AGRA, 2020:3) that may have little or no connection to small-scale farmer needs in rural areas. Additionally, the presidential pronouncement, that chain stores prioritise local agricultural products during the pandemic period (ActionAid, 2020; Lwizi, 2020) in view of delays in import of these products from the sub-region, did not translated into any actionable programme for small-scale farmers and therefore this group of farmers missed this 'golden opportunity' to supply their produce, particularly the perishable vegetable products to the premium market.

3.3 Official regulations and controls on movements

During October and November 2020 (R1), community movements within and outside villages had reduced by 92% and 96% respectively. The proportion of respondents who reported reductions in movements by R2, was 88% and 92%, representing a slight improvement in the rate by 4 and 3 percentage points respectively. Those who reported restrictions in visitations by family members, relatives or friends were 85% and 71% in R1 and R2 respectively, representing an improvement of 14 percentage points.

Although some sources indicated that the government put movement restrictions in place (ActionAid, 2020; AGRA, 2020; Matchaya et al., 2020), an analysis of all COVID-19 containment measures does not show a single measure centred on 'within-country' movement restrictions other than cross-border movements that were instituted for a limited time for non-essential travel. The Zambian state has not issued any regulation that prevented people from moving within the country or confining people to their homes (Haider et al., 2020) apart from moral appeals to people to 'stay-at-home' to avoid contracting or spreading the virus. It is important to underline that 'stay-at-home' advice was a voluntary measure and not mandatory. Thus far, Zambia has not invoked any wide-ranging geographic containment in people's movements or curfew as a measure to contain the spread of the Coronavirus. Nonetheless, Zambia did implement two very brief movement containments involving two districts during the 'first COVID-19 wave'. The first 'mini-lockdown' was in Kafue District bordering the capital city, Lusaka, that took place for just one day on 15 April 2020 to allow health authorities to carry out targeted testing after the district recorded three cases and was deemed a COVID-19 epicentre during the early days of the pandemic (Siame, 2020). A second movement containment was the brief border closure with Tanzania and a total lockdown of the border area in Nakonde from 11 May to 15 May 2020 following the escalation of cases among truck drivers and the community at the border area (AGRA, 2020; Haider et al., 2020).

3.4 Care responsibilities and assistance measures

Care responsibility increased for the sick and elderly (70% and 54% in R1 and R2, respectively), children (78% and 76%, respectively) and of other family members (57% and 32%, respectively). Eight-four per cent of respondents in R1 reported an increased burden of cooking, cleaning, fuel and water collection, while 14% reported no change in the level of effort with respect to these activities. The proportion in R2 was 78% and 20% respectively, representing a decrease and increase in respective rates of six percentage points. All schools were closed in R1 but had re-opened by R2. After schools were closed, children worked at home more (61% and 64% for girls and boys, respectively). They also did more housework

"In agriculture, the extension services are being given and the government has given us FISP. So they have not let go of us. Aah, these things have been ongoing even before corona, yes. We haven't had anything specific to corona coming, no."

Local school chairman, Kabengeshi

(76% and 68%), more farm work (41% and 64%), as well as some paid work away from home (5% and 7%). Some children were reported to be sitting idle (1 % boys and 13% girls). This finding supports assertions made by ActionAid that the emergence of COVID-19 would increase the burden of unpaid care work at home for children (especially girls) who could no longer go to school due to school closures (ActionAid, 2020).

Respondents said that most COVID-19 assistance during both R1 and R2 was received from the government (33%, which increased by R2 by 13 percentage points to 46%) and local village organisations (12%, which reduced by six percentage points to 6% by R2), while a smaller number received support from other external organisations (7%, which reduced to 4%), religious organisations (6%, which remained at 6%) and family/friends (4%, which reduced to 2%). This finding was corroborated by key informants who observed that most support to smallholders in the study areas was from the government and was in form of the more generic annual government-operated Farmer Inputs Support Programme (FISP) that provides an inputs package containing mainly maize seed and fertiliser. It is worth noting that, at the time of R2, the government had already distributed the FISP inputs package for the 2020/2021 farming season to its beneficiaries.

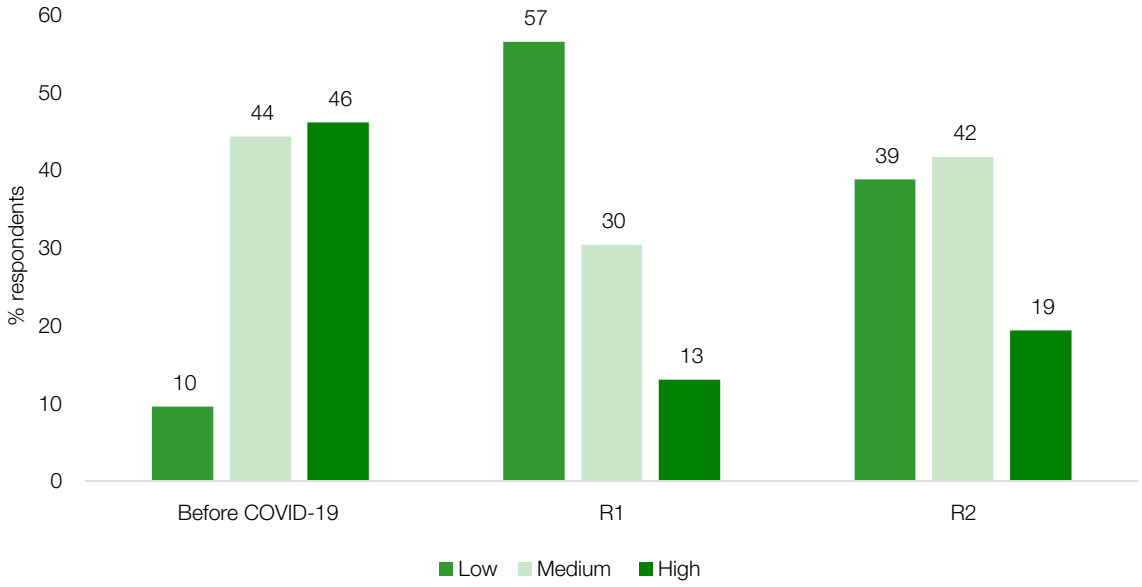
Key informants observed that other organisations, other than the government, played a very dismal role as far as humanitarian or other support to small-scale farmers were concerned. Thus, from the evidence, it is clear that rural small-scale farmers did not receive any kind of social support to mitigate the impacts of COVID-19. Key informant interviews further revealed that apart from awareness campaigns and, in some cases, donating PPE by government health and agricultural departments, there has not been any tangible COVID-19 programmes provided by the state or non-governmental organisation (NGO) in support of small-scale farmers. Despite the challenges presented to small-scale farmers by the pandemic, the government and donors instead focused their efforts on helping urban dwellers through various economic stimulus packages and emergency cash assistance programmes, leaving out small-scale farmers (who had no access to the programmes) who produce over 90% of food in the country (FAO, 2020; OCHA, 2020a; WFP, 2020).

4.1 Farming, labour and marketing

4.1 Farmer participation in farming and business activities

Generally, households reported reductions in their participation in farming activities from the time COVID-19

Figure 1: Change in participation in farming



Source: Own calculations from APRA COVID-19 Rapid Assessment Surveys

"The headman here has been very active in ensuring that the restrictions in movements are enforced; local people started to chase traders from urban areas to avoid Coronavirus. So the farmers who grow tomato have stopped because of no market; the traders from Copperbelt stopped coming due to these social restrictions."

Local school chairman, Kabengeshi

started to October 2020 (R1), and a further reduction up to March 2021 (R2) (**Figure 1**). The proportion reporting decreases in participation increased for household heads from 47% to 58% between R1 and R2, while it remained more or less the same (54% and 53%, respectively) for their spouses. Participation in businesses or household enterprises were reported as decreasing for the households by 87% and 76% of the respondents in R1 and R2, and by 89% and 71% for their spouses respectively. It is interesting to note that all female-headed households in the sample reported a decline in business or household enterprises, but this proportion was about two thirds of male-headed households.

4.2 Access to work and hired labour

This study sought to establish whether COVID-19 had negatively impacted access to work both within and outside their villages, and whether farmers were able to hire labour during the pandemic. Survey results show that the proportion of households that reported an ability to access work within the village since the onset of the pandemic was 50% in R1 and this had reduced further to 44% by April 2021 (R2). The proportion of households able to access work outside of their village was low (20%) compared to households able to access work within the village in R1(20 %), however, this proportion slightly increased to 30% in R2. This finding reveals that the disrupted labour supply within villages was driven by fear and anxiety about getting infected during the initial period of the pandemic, as well as perceived government movement restrictions. This is corroborated by the results from other studies. Nhemachena and Murwisi (2020), for example, makes the same finding on COVID-19's impact on farm labour shortages during the harvesting of maize, soya and wheat in Zambia, while a study by FAO (2020) makes a similar finding in a study on Eastern African countries.

"Most activities had stopped at first because people were afraid of contracting the virus. So few would even think of employing anyone. It was not clear how the virus was moving, so people had stopped employing. But now they have realised that COVID will be with us for some time and people are now getting back to normal activities. Some small-scale farmers do employ piece workers and the big farmers on the farm block also employ."

Agricultural camp officer, Nshinso

Ability to hire labour to continue farming activities also increased slightly by 4 percentage points from 63% in R1 to 67% in R2. However, the cost of hiring casual labour was reported to have increased by 77% households in R1, which increased further to 85% in R2. The figures for seasonal or permanent labour were similar at 78% and 82% respectively.

While key informants noted that the first wave of COVID-19 was characterised by low infection and death rates, there was a general view that fear of infection within the communities led to fewer households hiring workers during the initial phase of the pandemic. By R2, these fears had eased and so some farming households were beginning to hire workers again.

4.3 Marketing of farm produce

The ability of households to sell various commodities in different types of markets generally decreased due to the pandemic (**Table 2**). By R1, 82% of the respondents had seen a decrease in access to district or regional markets, together with the cross-border markets. The ability to sell had also reduced at local markets (81%), the farm-gate or own farm (78%) and national markets (64%). By R2, access to these markets was still reported to have decreased but the proportion of households reporting a further decrease had reduced. By this time, the biggest decrease was reported in access to national markets (down by 19 percentage points) followed by farm-gate or own farm and cross-border markets (down by 14 percentage points respectively), local markets (down by 8 percentage points), and district or regional markets (down by 6 percentage points).

Despite the relatively high infection and death rates witnessed during the latter part of the COVID-19 first wave and the beginning of the second wave in the last quarter of 2020, key informants expressed a view that some economic activities had rebounded as people had been encouraged by the government to conduct their daily economic activities to safeguard livelihoods so long as they followed health guidelines in place. However, a lack of clarity on COVID-19 movement restrictions resulted in inconsistences in

Table 2: Changes in access to markets due to COVID-19

Type of market	Change	% respondents		Percentage points change
		R1	R2	
Farm-gate or own farm	Decreased	78	64	-14
	No change	8	20	12
	Increased	14	17	2
In local markets	Decreased	81	73	-8
	No change	10	11	1
	Increased	9	16	7
In district or regional markets	Decreased	82	77	-6
	No change	10	9	-1
	Increased	7	14	7
In national markets	Decreased	65	46	-19
	No change	12	35	23
	Increased	23	19	-4
Across the border	Decreased	82	68	-14
	No change	13	7	-6
	Increased	5	25	20

Source of data: Own calculations from APRA COVID-19 Rapid Assessment Surveys

> *"…local people had started chasing tomato traders coming from urban markets from the Copperbelt over fears that they would bring COVID to the community; the village headman particularly has been very active in ensuring that the restrictions in movements are enforced. So, traders stopped coming in to purchase tomatoes due to these local restrictions on movements. This has really affected smallholder farmers who grow this crop with some stopping growing the crop altogether."*
>
> *Local school chairman, Kabengeshi*

interpretation and enforcement at the local level and, therefore, negatively affected farming activities of some communities and benefitted others. For instance, where as in Kabengeshi buyers of farm produce from the urban areas were reportedly prevented from coming to the village to buy agricultural produce, in Miloso it was observed that buyers from the Copperbelt towns and Kasumbalesa border post were making weekly trips to buy tomato for the Democratic Republic of Congo market without restrictions.

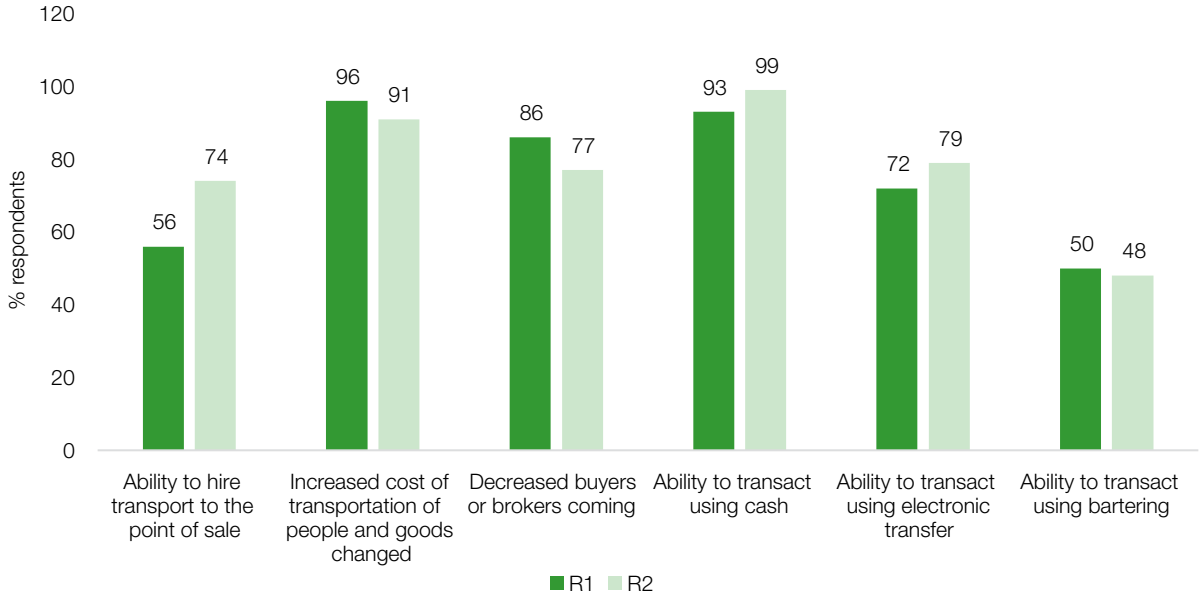
4.4 Transport, transactions and agricultural services

During R1, 56% of the households reported an ability to transport commodities to the points of sale and this increased to 74% in R2 (**Figure 2**). However, the cost of transport remained high as 96% and 91% of the respondents in R1 and R2, respectively, reported increasing costs. Buyers or brokers coming into the communities decreased but the rate decreased by 9 percentage points between R1 and R2, from 86% to 77%. Key informant interviews, however, revealed that farmer produce such as vegetables, and grains such as maize and soya bean, is largely picked and transported to long-distance urban and cross-border markets by buyers or brokers who provide their own transportation. Regarding grains, key informants further noted that the government-run Food Reserve Agency also has depots in central places in the area where farmers sell most of their maize crop when the grain marketing season begins.

With regards to the modes of transactions used during the pandemic, the survey revealed that cash was the most popular with 93% and 99% of the respondents acknowledging using cash for transactions during R1 and R2, respectively. This was followed by the use of electronic transfers with 72% (R1) and 78% (R2) of the respondents saying they used this mode. In the cases of cash and electronic transfers, the survey findings show an increase in the use of these modes from R1 to R2 by about 6 percentage points. According to key informants, using cash in transactions was by far the most popular mode as people were afraid of being swindled when transacting large amounts of money through mobile money.

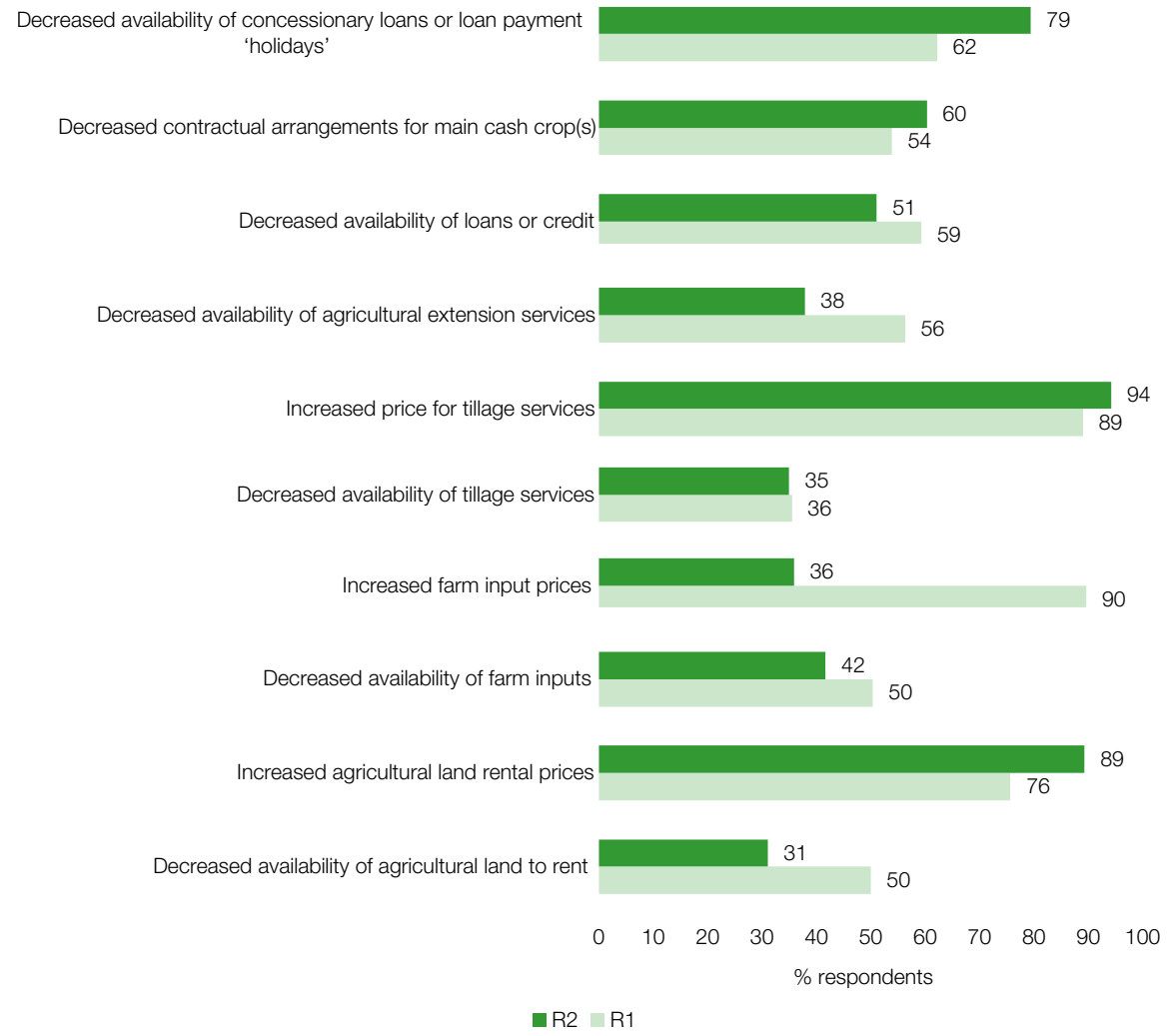
COVID-19 has adversely affected the availability of services for agricultural production and their prices in the study areas (**Figure 3**). During R1 in October 2020,

Figure 2: Effect of COVID-19 on selected farming services



Source: Own calculations from APRA COVID-19 Rapid Assessment Surveys

Figure 3: Effect of COVID-19 on agricultural production services



Source: Own calculations from APRA COVID-19 Rapid Assessment Surveys

"In terms of inputs, they were expensive at the time, hence, farmers were not having access to everything they would want… the inputs are very expensive and some of them cannot afford to buy fertilisers since some of them are not on the government's FISP. For those who are in the FISP programme they do not have any challenge, their only concern is feed, weed killer that have become very expensive due to Coronavirus."

Agricultural camp officer, Nshinso

respondents reported decreases in the availability of agricultural land to rent (50%), farm inputs (50%), agricultural extension services (56%), loans/credits (59%), contractual arrangements for cash crops (54%) and concessionary loans (62%). However, by the time of R2 in March 2021, the proportion of respondents reporting a decrease in the availability of these services had also decreased (to 31%, 42%, 38%, and 51% respectively) except for contractual arrangements for cash crops (60%) and concessionary loans (79%) which had seen an increase in households reporting a decrease. This finding is not surprising. A few months into the pandemic, the low number of confirmed cases and deaths prompted the easing of some the containment measures by the government that made it possible for people to resume some economic activities. Additionally, the low cases and deaths helped remove the initial fears by members of the public and, with encouragement from the government, began to carry out some economic activities.

Again, **Figure 3** shows that prices for farm inputs, tillage services, and agricultural land rental increased during R1 (90%, 98%, and 76% respectively). However, by R2 the proportion of respondents reporting a price increase in inputs had radically dropped (36%) while those reporting an increase in prices for tillage services and agricultural land rental had increased (94% and 89%, respectively). The fact that fewer households reported increased prices of inputs by R2 is, however, surprising and at odds with key informant data. Key informants observed that small-scale farmers, particularly those that were not FISP beneficiaries, had to grapple with expensive agricultural inputs during the 2020/2021 agricultural season. The cost of fertiliser, especially, was cited as having almost doubled from about ZK350 in the 2019/2020 farming season to about ZK690 during the 2020/2021 season. They observed that other inputs like weed killers, fungicides and stock-feed had taken the same trend. A general view throughout the interviews with key informants was that farming inputs were readily available but the prices had gone up, increasing the cost of production, thus affecting farmer incomes.

5. Food and nutrition security

While the availability of the different food types, apart from dark green vegetables, were largely reported to have decreased in R1, availability largely increased for all types except fish and seafood in R2, which remained more or less the same as in R1 (**Table 3**). This can be attributed to the 2020/2021 crops which were ripening and being harvested, as well as the easing of some COVID-19 restrictions which made it possible for economic activities to rebound and thus increase the supply of food items. However, food prices generally continued increasing (**Table 4**), except for vegetables. The reported food price increase was greatest for grains, and particularly maize which is Zambia's main staple. Maize prices always take an upward trend a few months prior to the commencement of the next harvest season (lean period between November and April) as the commodity becomes scarce.

Table 3: Extent to which food availability decreased due to COVID-19

Food type	% respondents	
	R1	R2
Grains	42.6	35.3
White roots and tubers and plantains	50.0	34.3
Pulses, nuts and seeds	53.6	45.1
Milk and milk products	60.4	44.4
Meat and poultry	52.7	42.0
Fish and seafood	59.1	58.8
Eggs	54.8	41.4
Dark green leafy vegetables	34.8	23.2
Other vegetables	46.3	25.5
Other fruits	58.3	46.5
Processed foods (snacks, sweets, beverages)	43.4	24.2

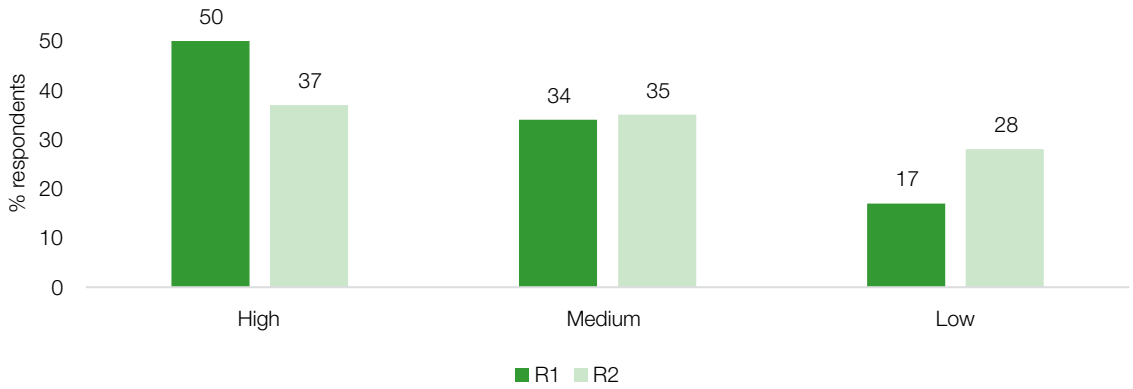
Source of data: Own calculations from APRA COVID-19 Rapid Assessment Surveys

Table 4: Extent to which food prices increased due to COVID-19

Food type	% respondents	
	R1	R2
Grains	82.6	98.0
White roots and tubers and plantains	80.9	92.2
Pulses, nuts and seeds	86.4	92.2
Milk and milk products	91.9	96.0
Meat and poultry	92.0	92.0
Fish and seafood	96.5	100.0
Eggs	90.4	98.0
Dark green leafy vegetables	75.7	77.8
Other vegetables	75.9	75.5
Other fruits	88.7	82.2
Processed foods (snacks, sweets, beverages)	89.5	99.0

Source of data: Own calculations from APRA COVID-19 Rapid Assessment Surveys

Figure 4: Food insecurity status by survey round



Source: Own calculations from APRA COVID-19 Rapid Assessment Surveys

That food availability increased in R2 can be confirmed by the proportion of respondents reporting not having enough food to meet family needs reducing from 58% to 42% between R1 and R2. Furthermore, dividing FIES into three equal groups of 0-2 (low food insecurity), 3-5 (medium food insecurity) and 6-8 (high food insecurity) shows that while about half of the households in R1 fell into the high food insecurity status, only 37% did so in R2 (**Figure 4**). The proportion of households falling in the medium food insecurity group remained almost the same, while those in the low food insecurity category increased by 11 percentage points from 17% to 28%. The survey results on food availability notwithstanding, key informant interview data indicated that small-scale farmers in the study areas were food secure in as far as the main staple food crop is concerned, as most grew their own maize crops, but that prices for purchased food items such as sugar and cooking oil had kept on increasing. For example, before the pandemic, 2.5 litres of cooking oil was reported to have costed around ZK60 but this had increased to over ZK100 by R2 in March 2021. With inflation at around 22%, a weakening

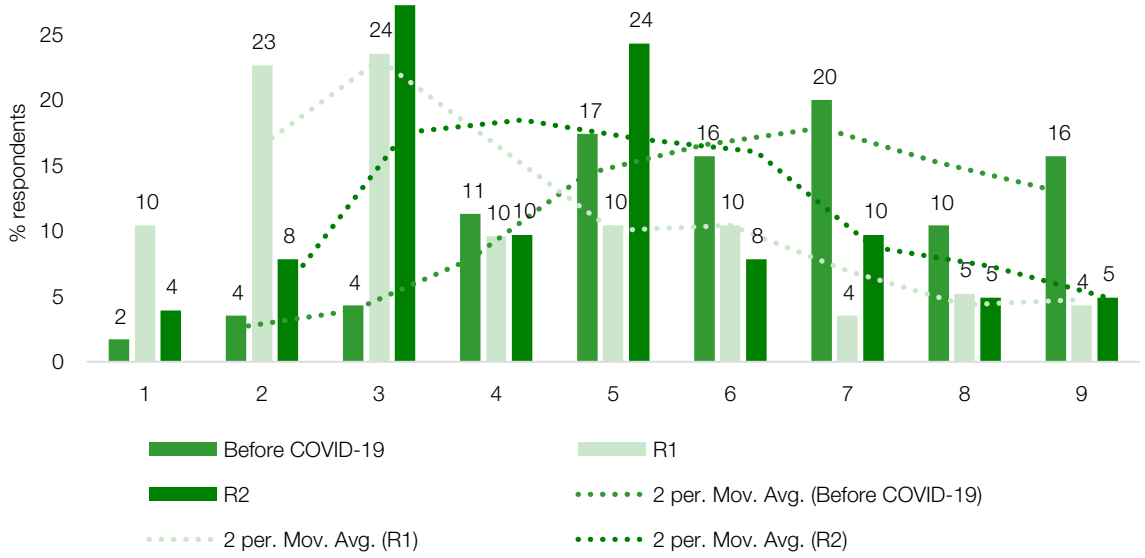
> *"Now people have food; they grow their own grains like maize, the main food crop. When Coronavirus started… some had difficulties to access food especially those who buy mealie meal [maize meal]. But now most farmers have food. They have cultivated this season [2020/2021] and we had good rains also. In the next few months people will be harvesting their crops; they won't starve…"*
>
> *Village headman, Lilanda*

currency and rising prices for purchased food items, it is reasonable to suggest that several households were experiencing food and nutrition insecurity.

6. Poverty

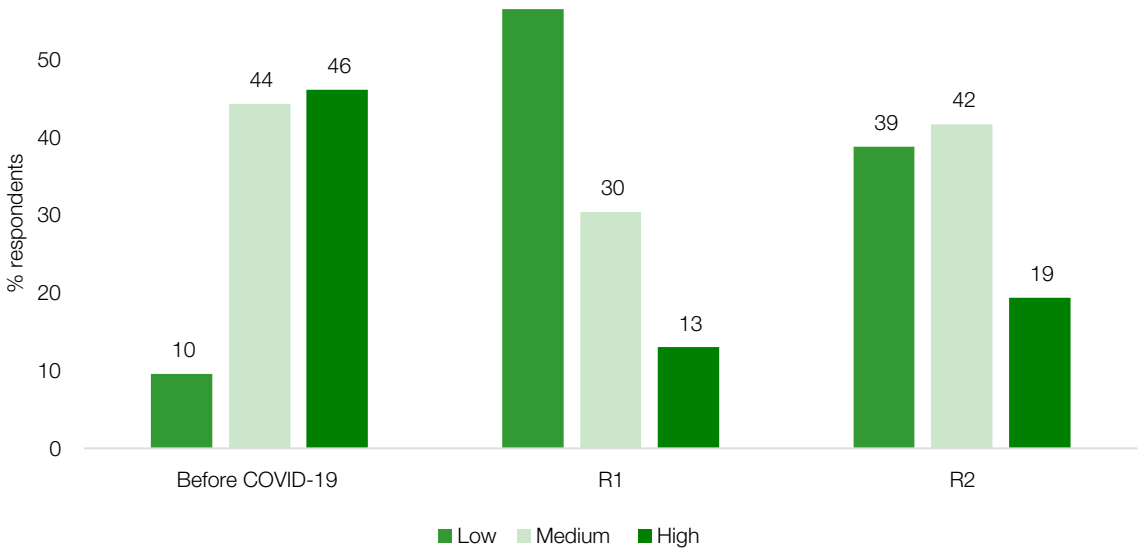
More than three quarters of the respondents in both survey rounds (83% and 85%, respectively) reported that the overall cost of living had increased. During the surveys, the respondents were asked to imagine a nine-step ladder, where the 1st step are those who are totally unable to change their lives, while on step nine stand those who have full control over their own lives, and were asked where they thought they stood on the ladder. Analysis of this data shows that a good proportion of households felt in control of their lives before the COVID-19 pandemic (**Figure 5**). This reduced after the onset of the COVID-19 pandemic in R1 but the situation improved by R2, even if it was still below pre-pandemic levels.

Figure 5: Household distribution on the poverty ladder



Note: The dotted lines are trend lines generated using the moving average[2]
Source of data: Own calculations from APRA COVID-19 Rapid Assessment Surveys

Figure 6: Household ability to change their lives



Source: Own calculations from APRA COVID-19 Rapid Assessment Surveys

2 A moving average (also called a rolling average) is an average based on subsets of data at given intervals. Calculating an average at specific intervals smooths out the data by reducing the impact of random fluctuations. This makes it easier to see overall trends, especially in a chart. For example (as in the chart) if the period value is 2, the first two values are averaged, that value is the first point on the line, and then the second and third values are averaged and that becomes the second point.

"Because of the fear of COVID, most farmers are selling just locally so it's not good because prices [of farm produce] are really low…while inputs are expensive. Before COVID, farmers took their products straight from the farm direct to the border but this time they were restricted at the border, especially Kasumbalesa, where farmers sell most of their tomatoes, hence selling their products locally. So, farmers' income has reduced, and so is their ability to buy enough of the food stuffs they need from the shops."

Agricultural camp officer, Nshinso

Dividing the ladder into three equal groups of 1-3 (low ability), 4-6 (medium ability) and 7-9 (high ability) shows that prior to the pandemic, only about 10% of households fell into the low ability category with the remaining 90% falling almost equally in the medium and high ability categories (**Figure 6**). After the onset of the pandemic, the proportion in the low ability category increased to 57% and those in the high ability category reduced to 13% (R1). The proportion in the low ability category decreased to 39% while that in the medium and high ability category increased to 42% and 19% respectively by R2.

Overall, this result indicates that COVID-19 pushed a significant proportion of households in the study areas into the low ability category of being able to take full control of their lives, while at the same time reducing the proportion people placing themselves in the high ability category. The medium ability category remained more or less stable throughout and in fact rebounded to the pre-pandemic levels by R2. Although there was a slight recovery in the high ability category during R2, the recovery has not brought this category back to its pre-pandemic levels, with it still lagging by a significant 27 percentage points. This means that the impact of COVID-19 has pushed a significant proportion of households into poverty in the short to medium term, and it is likely that it will take households a longer time to recover.

7. Conclusions

The objective of this study was to gain real-time insights into how the COVID-19 crisis was unfolding in Zambia and how rural people and food and livelihood systems were responding. The study focused on documenting and understanding the impacts of the pandemic at the household level in terms of changes in participation in farming activities, availability of services for agricultural production, labour and employment, marketing and transport services, food and nutrition security and poverty and wellbeing. The study was conducted with emergent small-scale farmers in five rural communities around the Mkushi Farm Block in Mkushi District, in central Zambia.

Overall, the study results show that COVID-19 has had negative impacts on small-scale farmer agricultural production and livelihoods in the short to medium term. Largely, the impacts have manifested themselves through disruptions to farming activities and services, labour supply, market access and spikes in prices for farm inputs, tillage services, and agricultural land rental and labour. These disruptions were driven largely by fears among communities against infection during the initial period of the pandemic, as well as the perceived movement restrictions by state authorities.

Temporary closure of borders with Tanzania in Nakonde and the Democratic Republic of Congo in Kasumbalesa, and perceived movement restrictions within the country, disrupted lucrative long-distant markets for smallholder farmers and the operations of buyers or brokers who came to villages to buy farm produce. Lack of clarity on COVID-19 social restrictions, such as the 'stay-at-home' advice, resulted in inconsistences in interpretation and enforcement at local levels, and negatively affected market access for farm produce by some rural farming households, creating winners and losers amongst farming communities. Meanwhile, the local market offered low prices for farm produce while prices for farming inputs escalated. Therefore, low incomes from farm produce and higher prices for inputs and higher labour costs increased the cost of production and reduced the purchasing power of many rural households that ultimately compromised their livelihoods and pushed a significant proportion of households into poverty.

Over and above farming activities, the pandemic disrupted non-farm business activities from which some small-scale farmer households derive part of their livelihoods. At the same time, emergency support from family and friends, local religious organisations, local village organisations and other external organisations remained insignificant throughout the study period, meaning that rural households had nowhere to seek support. Government and donor agencies focused their efforts on helping urban dwellers through various economic stimulus packages and emergency cash assistance programmes, leaving out small-scale farmers who had no access to these programmes.

While some households reported improvements on a number of variables months after reporting negative

change, analysis shows that the recovery has not brought these households back to their pre-COVID-19 pandemic positions. From this evidence, we can speculate that recovery from the impact of COVID-19 and the government-imposed 'lockdown' measures is likely to take rural small-scale households a longer timeframe to recover from. However, the COVID-19 pandemic is evolving, and little is still known about its future trajectory, particularly in sub-Saharan African countries like Zambia.

Data suggests that small-scale farmers are crucial to food security in Zambia as they produce about 90% of food in the country (WFP, 2020). Yet small-scale farmers have the least capacity to mitigate shocks such as COVID-19. There is, therefore, a clear case for support to the smallholder sector to mitigate the impacts of COVID-19 on agricultural activities and services and make small-scale farmer livelihoods more resilient. In the short to medium term, the government and cooperating partners should devise social protection interventions that are inclusive of small-scale farmers and rural agricultural workers that have been negatively affected by COVID-19. These interventions can be adapted from the existing social cash transfer programmes but should focus on enhancing the livelihood assets of small-scale farmers and agricultural services to boost the purchasing power of rural households.

The proposed post-COVID-19 agricultural strategy to drive recovery and growth in the agricultural sector should be inclusive of the needs of small-scale farmers in rural areas, and be informed by the new challenges faced by small-scale farmers in the face of the pandemic such as market access and linkages. The study has established that one of the biggest challenges to small-scale farmer participation in agricultural activities during the pandemic is the perception that there was 'movement restrictions' put in place by state authorities. The government and other stakeholders should, therefore, clarify the 'lockdown' measures or 'social restrictions' such as 'movement restriction' and/or 'stay-at-home' advice for uniform application or enforcement, particularly in rural areas populated by a semi-illiterate population. Lastly, there is need for more in-depth studies that would look at a longer-time horizon to get a better picture of the COVID-19 impacts on food systems and rural livelihoods than the current rapid assessments that have focused on short-time horizons.

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